

IN THE SPECIFICATION:

Kindly amend the specification at paragraphs [0029], [0055], and [0059] as follows.

[0029] A printer and associated method that can retrieve and print a representation of multimedia is described. For example, a printer receives a document containing or referencing audio and/or video multimedia data. The printer then produces a printed document in accordance with the received document. In this application, the term multimedia can include any type of multimedia content such as, but not limited to, graphics (JPEGs, Gifs, etc), animation, video from any source and in any format, photographs, scans, audio from any source and in any format, and combined forms such as Macromedia Flash files, or static compound documents whose contents include embedded video, audio, or animation. In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the invention. It will be apparent, however, to one skilled in the art that the invention can be practiced without these specific details. In other instances, structures and devices are shown in block diagram form in order to avoid obscuring the invention.

[0055] Fig. 3(a) shows a first embodiment of the present invention for printing a paper document 306 and optionally performing an action 308. Fig. 5(a) shows a flow chart of a method used by this system. In Fig. 3(a), a data processing system 302 communicates with a printer 304. Data processing system 302 includes an initial copy of the document to be printed 322. This document 322 can have any appropriate format, including but not limited to ACSII text, Postscript, Microsoft Word, Adobe's PDF format, etc. (Postscript is a trademark of Adobe Systems Incorporated). This document optionally includes author-provided data, as discussed below. Data processing system 302 also includes a document rendering application 324, such as Acrobat Reader (available from Adobe Systems Incorporated). In this example, document rendering application 324 includes an application plug-in 325. Application plug-in 325, inspects every document printed by document rendering application 324 and preferably performs the following (see 504):

[[a.]] determines whether a retrieval query should be added to the document. For example, a plug-in searches the document for URLs that point to video and embeds them in the PDL sent to the printer. As another example, the plug-in 325 can construct an explicit

query, such as a conjunction of pairs of adjacent words in the document that could be applied to a database of stored PowerPoint recordings that are created by a system (that we call the Presentation Recorder) such as the one described in U.S. Patent Application No. 09/728,453, filed Nov 30, 2000, and U.S. Patent Application 09/728,560, filed Nov 30, 2000, entitled “Techniques for Capturing Information During Multimedia Presentations,” both of which are herein incorporated by reference in their entirety. The presentation recorder saves images of presentation slides together with audio and video of a person describing those presentation slides. The audio and video are time-stamped so that a user can retrieve and replay the multimedia associated with any particular slide. Each slide image is OCR’d and the results are stored in a full text index. In the present invention, a PowerPoint plug-in could create queries to such a full text index from each slide. Those queries would be embedded in the comments of the pdf file and the printer would apply them to the Presentation Recorders that it knows about. If it finds a matching recording, the printer would retrieve the multimedia, store it on the printer, and inform the user that this was done. The printer could also print a video paper representation for that data. In some embodiments, the plug-in retrieves and transmits multimedia data to the printer (e.g., audio and video clips are added to the PDL file. These would conventionally be classified as non-printing data since conventional printers cannot print audio or video).

[0059] Fig. 3(a) further shows a printer 304 having document processing software 326 and storage 329. In this example, document processing software 326:

a. determines whether the document contains application-derived data, and whether any further processing should be applied to the document (see 508). For example, the printer searches the received [[pdl]] PDL file for commands and data in the comments. If the commands indicate that the document should be searched for links or data, the [[pdl]] PDL file is searched for those elements. The printer can receive query commands to retrieve image data, audio clips, URLs, or video clips. Functional descriptions of such commands include but are not limited to:

- Search this document for any URLs;
- Search this document for specific URLs;
- Search this document for audio clips;

- Search this document for video clips;
- Retrieve and analyze any URL found (or a particular URL). The analysis preferably includes one or more of: extracting a host name, or directory information, or inferring a file type from a file name extension, or extract query data from a URL based form submission. For example: Extract all references to the New York Times web site, or all references to “.jpg” files, or all requests to the local workflow server for specific documents.

- Extract key video frames from any URL (or particular URL);
- Add bar codes to printed output;
- Save data on printer’s local storage
- Publish content of any URL (or content of a particular URL) to the web;
- Ask user for confirmation before taking action;
- Never ask for user confirmation

b. The printer 304 optionally processes the document to produce printer-derived data, e.g., a filter might be applied to postscript data that detects web URL’s. In this document, processing by the printer is classified as simple or complex. In general, simple processing involves the printer executing a well-defined external command or recognizing regular expressions (such as URLs). Complex processing by the printer involves performing a content-based operation on the PDL.

In a preferred embodiment, the printer software 326 executes simple processing. It inspects the comments in the PDL file and when it finds:

%%RICOH-NEPV1.0-CONTENT-FILTER NO

it determines that a content-based analysis of the PDL is not needed. Instead, printer 204 executes a command from data processing system 302.

c. The printer decides and performs an action in accordance with the content of the received document, e.g., the commands in the document might indicate that the document should be searched for links to video files and if such links are found, the video should be retrieved, key frames extracted from it, and a video paper representation constructed. A video paper layout may, for example, disrupt the original layout of the document. Alternately, it may be constructed in a layout that minimizes this disruption. For example, many URLs can be rewritten as bar codes, using at most space occupied by the textual form of a URL in the

original document. As another alternative, the video paper including information not in the original document (such as bar codes, links, etc) can be printed as a separate document or as a cover sheet to the original document.